

LIX.—*Contributions to the Ichthyology of Australia.* By JOHN RICHARDSON, M.D., F.R.S., &c., Inspector of Hospitals, Haslar.

[Continued from p. 359.]

JULIS AURICULARIS (*Cuv. et Val.*), Ear-marked Julis.

No. 18. Lieut. Emery's drawings.

I AM inclined to consider the beautiful drawing here quoted as a representation of the *Julis auricularis* (*Hist. des Poiss.* xiii. p. 489) discovered in King George's Sound by MM. Quoy and Gaimard, the naturalists of the expedition commanded by Captain D'Urville. Lieutenant Emery's specimen was procured at Abrolhos on the same coast.

It measured fourteen inches in length, the head forming two-ninths of this measurement, and slightly exceeding the height of the body. The ventrals are acute, but not longer than the rounded pectorals, which equal the sixth part of the whole length. The dorsal and anal rise equably as they run backwards to the height of one-third of the body. The caudal is much rounded. Lips flesh-coloured; from thence on the upper part of the head to the dorsal fin, and down to the middle of the eye, duck-green. Cheeks and operculum scarlet, terminating by a horizontal line even with the angle of the mouth, beneath which the colour is pale reddish lilac. Tip of the gill-flap smalt-blue, with a red spot and a black posterior edging. The pectoral region from the gill-opening to the anus and up to the level of the point of the gill-cover is white, which ends squarely behind. The ground-colour of the remainder of the body is vermilion-red, which takes a lakish tint on the flanks. The whole side is regularly streaked by sixteen stripes, a little narrower than the intervening spaces, and of a pistachio-green colour, except the two upper ones, which are smalt-blue. A rectangular black mark crosses the middle of the first two dorsal rays; the border of the fin is marked longitudinally by six waving gallstone-yellow lines, and the part beneath is crossed obliquely by crowded lines of the same colour. The anal wants the black spot, but is otherwise coloured exactly like the dorsal. Four coarser undulating gallstone-yellow lines cross the extremity of the caudal, and there are five round spots of the same hue on the proximal half of the fin; its ground tint being pale blue; each of its rounded corners is occupied by a narrow pale lilac crescent. The bright gamboge-yellow pectoral has three black streaks along its upper edge, and the ventrals are striped with deep lilac and yellow. The iris is painted with blue and scarlet concentric rings. The specimen described by M. Valenciennes had lost its original colours, though some tracings of the markings remained, which do not correspond well with the drawing here described.

Figure 13 of Lieutenant Emery's drawings represents a fish which was also taken at Abrolhos. It resembles the above so closely in its form and in the general arrangement of its

markings, that I cannot venture, on the authority of the figures alone, to consider it as more than a variety or perhaps a sexual dress.

Its dorsal and anal fins are however lower, and scarcely increase in height posteriorly. The ground-colour of the whole body beneath the lateral line is sulphur-yellow, and the longitudinal lines are buff-coloured, much fainter on the breast than elsewhere. A broad stripe of scarlet covers the snout, includes the eye, and, narrowing as it goes, runs backwards to the caudal fin. The back above it is brownish red, with two lines of a paler tint, occupying the place of the smalt-blue ones of the preceding variety. A bright king's-yellow tints the cheek and gill-cover, and fades to white on the throat. The gill-cover is tipped with black. The dorsal and anal are coloured like those of the preceding fish, except that there are only four longitudinal lines on their borders, and that the black mark on the dorsal is triangular. The pectoral is buff-coloured and unspotted, the ventral edged with buff, and the caudal crimson, crossed in the middle by three waving buff-coloured stripes, and having its angles pale lilac as in No. 18.

JULIS? RUBECULA.

Sparus rubecula, Solander, Pisc. Austr. p. 6; Parkinson, Bib. Banks. fig. 2. 36. no. 20.

Parkinson's drawing, quoted above, represents a fish which was taken on Cook's first voyage, in Totæranue or Ship Cove, one of the harbours of Queen Charlotte's Sound. The species is not noticed by the authors of the 'Histoire des Poissons,' but I think that its general aspect points it out to be a *Julis*, though the figure indicates a greater number (eleven) of spinous dorsal rays than any member of that genus is known to possess. Solander describes the colours of the recent fish, but does not mention the number of the rays, or the form of the pharyngeal teeth, so as to clear up the doubts occasioned by the unfinished state of the drawing.

The length of the sketch is eleven inches, and the height of the body or length of the head is exactly equal to a fifth part thereof. The caudal has a slightly concave margin, or rather its acute, falcate angles project a fifth part beyond the straight intermediate membrane. The dorsal rises slightly in its course backwards and ends acutely, but not in a slender point. The anal has a similar form, and the points of both fins reach the base of the caudal. Eleven spinous rays are indicated, occupying a third part less space than the soft part of the fin, and having the membrane behind their tips notched. The rounded pectoral just exceeds a sixth of the length of the fish. The ventrals are shorter, and terminate nearly their own length before the anus. The lateral line, traced continuously on the third row of the large scales which cover the body, follows the curve of the back till it passes beyond the dorsal, when it descends suddenly in a short oblique line, and then runs straight to the base of

the caudal. The profile of the head blends gradually with the curve of the back, the gill-cover appears to be much rounded off posteriorly, and the conical teeth are slightly curved and diminish rapidly in size as they recede from the symphysis. There is no canine tooth at the angle of the mouth, and no scales are depicted on the head. "*Sparus rubecula*. ('Kurakura' aboriginorum.) Habitat prope 'Cape Kidnappers.' Corpus vivide rubrum, subtus pallidum. Pinna dorsalis saturate rubra, superne punctis fusco-sanguineis adpersa. Pinnae pectorales rubicundæ, immaculatæ. Pinnae ventrales pallide incarnatæ, apice rubescentes. Pinna analis ex aurantiaco-rubra. Pinna caudalis saturissime aurantiaca, fascia lata, nigra ad basin." "*Varietas pallidior*. Totus piscis pallidior, pinna dorsali incarnata, punctis lineisque sanguineis adpersa, pinna caudali flavicante, alias simillimus." (Solander, *Pisc. Austr.* p. 5.) In the figure the tint of the head is dark lake-red, that of the body lighter, and of the caudal yellow, with a lilac edging and a well-defined even black bar across its base.

Several other members of the genus described in the 'Histoire des Poissons' have one or more black bars on the tail or caudal fin, but they differ materially from *rubecula* in other characters. Among these are *Julis cingulum* and *J. caudimacula*. Mr. Gilbert's collection contains a species obtained at the island of Timor, which approaches very near to *caudimacula* (C. & V. xiii. p. 465), and it may be only a variety of that fish, but it offers a different distribution of colours, though it has the same black bar across the tail. As it has not actually been detected on the Australian coasts, a description of it is foreign to the precise object of this paper. The *Crenilabrus chabrolii* of Lesson, which is the *Cossyphus maldat* of the 'Histoire des Poissons,' has also a black bar on the trunk of the tail, but farther removed from the caudal fin than in *rubecula*. The fish also differs from the latter in the presence of conspicuous scaly fillets at the base of the dorsal and caudal, in the elongation of the ventrals, in the rounded caudal, in the brilliant streaks on the head, the rows of spots on the body, and in its very different general aspect, which is peculiar to the genus *Cossyphus*, while the *rubecula* has more the character of a *Julis*. The *Labrus ephippium* is another of the family which has its tail encircled by a black or deep blue ring. It has nine spinous rays in the dorsal, is well characterized by a saddle-shaped black patch on the back, and is supposed to be a native of the Javan sea. As the distance between Timor and the islands leading to Java is not great from the north-west coast of Australia, and their parallels of latitude differ little, we may expect to find much similarity in their ichthyology.

JULIS? RUBIGINOSUS.

Sparus rubiginosus, Parkinson, Banks. Bib. fig. 2. 38. no. 4; Solander, Pisc. Austr. p. 7.

This fish was discovered on the coast of New Zealand on Cook's first voyage. Parkinson's figure was done after a specimen taken at Mattaruhow, and Solander has given the following account of the colours of one obtained off Kidnapper's Cape:—

“*Sparus rubiginosus*. Corpus pallide rubiginosum, macula oblonga transversali in singula squama. Caput rubrum subtus pallidum. Iris rubro-argentea; pupilla nigra. Pinna dorsalis livido-rubicunda, maculis sub-ocellaribus e viridi lutescentibus. Pinnæ ventrales et pectorales rubicundæ, immaculatæ. Pinna analis similis pinnæ dorsali, sed prope basin serie jam unica ocellorum rubicundorum. Pinna caudalis basi et lateribus e nigricanti-violacea, in medio olivacea. Habitat oceano prope Kidnappers.”—(Pisc. Austr. p. 7.)

Solander mentions, without describing, a variety taken at the same place. Parkinson's figure exhibits a fish having the same profile of the head and body with the *Julis decussatus* (Cuv. et Val. xiii. p. 433) figured in Bennett's 'Fishes of Ceylon' (No. 14), except that the height of the body is a trifle less, being contained thrice and one-half in the total length, caudal included. The mouth is small with thickish lips, which are represented shut, so that the teeth are not seen. The caudal is lunate on the margin, with the points acute and projecting about a fifth part of the length of the fin beyond the central rays. The spinous part of the dorsal is nearly even, or rather higher anteriorly, and contains nine or ten rays, which occupy somewhat less space than the jointed rays, of which about eleven or twelve are indistinctly indicated. The membrane is notched between the spines, the dorsal and anal terminate rather acutely, and their tips reach the base of the caudal. The pectorals are rounded and longer than the ventrals, which do not reach to the anus. The scales are large, and their uncovered discs have the form of vertical rhombs. There are several rows of small ones on the base of the tail. The lateral line is continuous, and has a sudden descending flexure opposite to the end of the dorsal. Four rows of spots are shown on the fore half of the anal, and three on the spinous portion of the dorsal.

The colours of the New Zealand *Labrus pæcilopleura*, as described in the 'Histoire des Poissons,' are not very dissimilar to those ascribed by Solander to the *rubiginosus*; but the *pæcilopleura* is not so high a fish, its caudal fin is square, its dorsal low, and its pectorals rather large.

JULIS? NOTATUS.

Sparus notatus, Parkinson, Bibl. Banks. fig. 37; Solander, Pisc. Austr.

This is also a New Zealand fish, taken on the same voyage. Parkinson's drawing in outline is from an example captured
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in Totæranue, a cove of Queen Charlotte's Sound. Solander's description of one taken off Tolaga, in lat. $38\frac{1}{2}^{\circ}$ S. long. $181\frac{1}{4}^{\circ}$, is as follows.

"*Sparus notatus*. Habitat Tolaga. Piscis interdum pedalis, virescens, inferne albus. Squamæ dorsi et laterum postice fuscæ. Macula magna nigricans utrinque paulo pone medium. Iris flavo-argentea: pupilla nigra. Pinna dorsalis sordide e cinereo-virescens, maculis fuscis et rubentibus. Obs. pone maculam lateralem fasciæ duæ obsoletissimæ, fuscæ, seu nebulosæ. Pinnæ pectorales pellucæ cum pauxillo flavæ et rubæ. Pinnæ ventrales luteæ, marginibus albis. Pinna analis lutea, basi albido-nebulosa, maculis duabus nigris. Pinna caudalis lutescens vel rubescens. Obs. in capite infra oculos interdum lineæ vel maculæ oblongæ cæruleo-virides. Juniores pinnam dorsalem habent altius coloratam." (Pisc. Austr. p. 16.)

Parkinson's figure shows that this species resembles the *Julis decussatus* still more exactly in the form of the body than the preceding one, but the snout is a little more obtuse. The oval black spot on the flank gives it some resemblance to a *Cossyphus*, but the position of the spot below the lateral line distinguishes it from the described species of that genus. The caudal ends squarely, or with a very slightly concave line, the angles neither projecting nor yet rounded off. The dorsal rises very gently from the first spine to the end of the soft part, which is moderately rounded, and does not quite reach the base of the caudal: it contains nine spinous rays. The anal is lower. The pectoral is obliquely rounded, its upper angle being acute. The ventrals do not reach the anus. The scales are rather large, and their exposed discs have a vertical acutely oval or hexagonal outline. The lateral line is continuous, and bends suddenly under the end of the dorsal as in the preceding species.

A *Sparus stellatus* and *Labroides asellinus* are mentioned in the 'Pisces Australiæ,' but as their colours only are noted, and nothing is said of their forms, we cannot say whether they ought to be ranked in the Wrasse family or not.

ODAX VITTATUS, Solander's Odax.

Coregonoides vittatus, Solander, Pisc. Austr. p. 1 and 39.

Callyodon coregonoides, Parkinson, pl. 44. no. 2.

This fish was discovered on Cook's first voyage at Mattaruhow, on the coast of New Zealand. Solander has the following notices of it in his 'Pisces Australiæ.'

"*Coregonus vittatus*. Totus piscis castaneo-umbratus, subtus multo pallidior, et uti alibique argentum mixtum esset. Vitta ex incarnata argentea, utrinque per medium piscem, sub basi mandibulæ inferioris incipiens, sub oculos ducta per basin pinnarum pectoralium in media latera, ad basin pinnæ analis extensa. Sæpe maculæ parvæ violaceæ in seriebus longitudinalibus per dorsum et latera dispositæ. Iris e viride argentea. Pupilla majuscula, violacea, nigra. Caput

læve, subconicum. Dentes quatuor, duo in utraque maxilla, granulosi seu denticulis obtusis arcte imbricati. Pinnæ abdominales in antica parte abdominis, pone thoracem ut potius piscis abdominalis quam thoracicus, etsi dentibus convenit Callyodontibus. Pinnæ omnes e fusco-castaneæ: pectorales et caudalis extus sordide rubicundæ." (p. 1.)¹

"Pisces adulti sesquipedales, a junioribus valde variant et proportione et colore. Adulti crassi sicut cum capite parvo subtus (h. e. gula) gibbosiusculo, abdomine late rotundato. Color adultorum fusco-cinereus. Vitta laterali e maculis magnis sordide carnes interrupta, non continuata. Br. 5; D. 34; A. 14; C. 14; P. 14; V. 5. Pinna dorsalis postice altior; radius postremus subduplex. Pinna analis itidem postice altior: radiis primis minutis. Pinnæ pectorales oblongo-rotundatæ. Pinnæ ventrales in thorace sed pone pinnas pectorales sitæ. Obs. Figura nostra exhibet pisces crassiorem, præcipue gulam." (p. 39.)

The figure here referred to is eleven inches and a half long, and represents a fish with a fuller head and more obtuse snout than *Odax semifasciatus* or *pullus* of the 'Histoire des Poissons.' The eye is farther from the profile than in either of these, and the body is less slender, its height being just equal to the length of the head and to one-fifth of the total length, caudal included. The dorsal undulates in its height: its first four rays are equal to each other, after which the fin gradually lowers to the thirteenth or fourteenth spine and then rises again, so that the posterior quarter of the fin is higher than the four anterior rays. The caudal is slightly concave, with its angles scarcely rounded. Parkinson has added the following note respecting the colours:—"The stripe on the side silvery, the spots on the P. D. and P. A. transparent. The membranes of the tail transparent, the spots on the side purple-gray." The back is tinted dark liver-brown, fading on the belly, with roundish spots below the lateral line ranging from the pectoral to the caudal.

George Forster's sketch of *Odax pullus* (202. Banks. Libr.), discovered in Queen Charlotte's Sound, New Zealand, seems, from a query appended to it, "*an Callyodon coregonoides?*" to have been considered by some annotator to be a representation of Solander's fish. The general proportions of the fish and the numbers of the fin-rays correspond, but the figure does not indicate the characteristic lateral stripe of *vittatus*, nor does the dorsal exactly correspond in shape, being even for two-thirds of its length, and then rising agreeably with the phrase in J. R. Forster's notes as quoted by Schneider (*Scarus pullus*, p. 288), "*pinna dorsi longitudinalis, primum æqualis dein adscendens.*" No spots are expressed in Forster's pencil sketch, nor are any mentioned by Schneider. The caudal is described by the latter as sublunate, and also by M. Valenciennes, who adopts the species; but his plate (No. 408) in the 'Histoire des Poissons' exhibits an even dorsal, a

greatly rounded caudal, and a much more slender head than that of *vittatus*. This plate is probably a representation of a fish procured by MM. Quoy and Gaimard at Port Western in New Holland, and unless the artist has erred in the form of the dorsal and caudal, it can scarcely be the same with Forster's *pullus*, and is still more evidently distinct from Solander's *vittatus*.

[To be continued.]

LX.—*Descriptions of British Freshwater Confervæ, mostly new, with observations on some of the Genera.* By ARTHUR HILL HASSALL, Esq.

GENUS DRAPARNALDIA.

Draparnaldia repetita. Filaments branched, consisting of a repeated series of cells, each of which is composed of five or six cells or utricles which gradually decrease in size from the first or lower cell, which is rounded below, to the last or upper one; a tuft of minutely divided filaments, similar to those of other *Draparnaldiæ*, arises from the superior cell of the series usually only on one side, but sometimes on both; the different series are not placed in a straight line immediately above each other, but are arranged somewhat in a zigzag or waved manner.

I have only once met with the above species; and then but in small quantity; it is therefore no less rare than it is curious. Each series of cells is an epitome of the entire plant, which consists but of an aggregation of these series. A sketch of it was forwarded to Dr. Greville, who did not hesitate to agree with myself in the opinion of its distinctness.

Draparnaldia elongata. Filaments very slender, ciliated; cells fasciated, usually three times as long as broad.

I once met with a considerable quantity of the above species in a horse-trough near Cheshunt: it is however by no means common.

Draparnaldia sparsa. Filaments highly mucous, very slender, sparingly branched; branches acuminate, not usually ciliated; cells rather broader than long.

This is by no means an uncommon species during the spring and early part of the summer, being attached frequently to dead leaves and sticks. In the fineness of the filaments, in the shortness of the cells, as well as in the excessive mucosity of its filaments, it seems to evince some relation to the genus *Chætophora* (a bad name, as the species of the genera *Batrachiospermum* and *Draparnaldia* are likewise chætophorous).